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HIGH PRODUCTION VOLUME (HPV) CHALLENGE PROGRAM

TEST PLAN
FOR
ALDEHYDES, C4, SELF-CONDENSATION PRODUCTS, HIGH-BOILING FRACTION
(CAS NO.: 68990-21-6)

PREPARED BY:
EASTMAN CHEMICAL COMPANY

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TEST PLAN SUMMARY

The Eastman Chemical Company hereby submit for review and public comment the test plan for aldehydes, C4, self-condensation products, high-boiling fraction (Solvent C; CAS NO.: 68990-21-6) under the Environmental Protection Agency's (EPA) High Production Volume (HPV) Chemical Challenge Program. It is the intent of our company to use existing data already generated on either the constituents of Solvent C or expected metabolites of them in conjunction with EPA-acceptable predictive computer models to adequately fulfill the Screening Information Data Set (SIDS) for the physicochemical, environmental fate, ecotoxicity test, and human health effects endpoints. We believe that the information already available, or in the process of being generated, are adequate to fulfill all the requirements of the HPV program without need for the conduct of any new or additional tests.

Solvent C is essentially manufactured and handled in closed-systems with minimal chance for exposure in the workplace or to the general population. The primary use (approximately 93%) of this product is as a fuel for burning. In this application, product is either shipped by tank truck to other sites within the company where it is burned directly or marketed to a few customers where it is blended at a level of less than 1% into fuel oils used by consumers to burn for home heating. Other minor or occasional uses of this product include its use as a solvent in asphalt production and as part of a process solvent in the industrial extraction of phosphoric acid from rock. This latter end-use is also performed in closed systems. Thus, there is essentially no exposure to this chemical by the general public and in industrial settings, exposure is minimized by how it is manufactured and handled. There are a very limited number of customers using Solvent C with the potential for exposure only manifested during its transfer to and from tank trucks or under conditions of an industrial accident. In total, exposure to Solvent C is very limited in both its potential duration and frequency.

Solvent C is described as a yellow-green liquid. It is a Class 2 chemical consisting of approximately 10 major chemicals consisting of the CAS registry numbers displayed below in Table 1 and their approximate percentages. Of these 10 major constituents, 7 have already been, or are in the process of being, evaluated through the OECD or ICCA SIDS program, or the US HPV program. Of the remaining three not in a formalized HPV program, one, butyl butyrate, has been approved by the FDA as a synthetic flavoring agent for food under 21CFR 172.515 and is found naturally in many types of fruits. This compound is formed through an ester linkage between n-butanol and butyric acid. It would be expected that this ester linkage would readily be cleaved to yield the parent molecules butyric acid and butanol, both of which are in the ICCA SIDS program. A second nonHPV chemical, 2-ethyl-1,3-hexanediol was at one time registered with the EPA for use as an insect repellent for use by humans and has a history of use in cosmetics and other industrial applications. Thus, significant amounts of toxicity information have already been developed and are available to the public either through the EPA or in peer-reviewed journals. This chemical is only present at a maximum concentration of 10%. Thus, data are currently available for public review on the majority of the chemicals comprising Solvent C with most of this information in summary format. The third nonHPV chemical, di-2-ethylhexyl ether, is listed by the EPA as a Class 3 inert ingredient for use in pesticides. The EPA's Office of Pesticide Programs has contracted a Structure Activity Team (SAT) to prepare toxicological and ecological assessments for these inert ingredients. While there is essentially no mammalian toxicity data identified on it, it is not acutely toxic with a reported LD₅₀ of 34 gm/kg. Another chemical found within Solvent C is listed as "alkyl acetals". These chemicals comprise a small portion of the total (2-10%) and are formed by a reaction between alcohols and aldehydes. The reaction is readily reversed in the presence of an acid.

In conclusion, Solvent C is a complex mixture of several chemicals. It is manufactured, handled, and marketed into end uses in such a manner that, except under conditions of an accident, exposures are very limited. Hazard assessment information in the form of robust summaries or as published literature for most all the SIDS endpoints are either currently available or will be made publicly available through various ongoing HPV programs. This information adequately characterizes the hazard potential for the majority of the chemical constituents in Solvent C and thus would likely represent the potential hazards of Solvent C. The goal of the HPV program is to have a screening level of understanding of the hazards presented by a chemical available to the public. Eastman believes the data identified to date that are presently available to the EPA and the general public, in total, fulfill this objective and that further toxicity studies would not be warranted on a chemical mixture whose constituents vary and has such low potential for human exposure. Accordingly, Eastman believes that the obligations of our commitment to this chemical in the HPV challenge program have been completed through this submission.